## REMARKS

The subject application comprises original claims 1-120. In response to a restriction requirement dated November 24, 2004, Applicants elected claims 73-89. Claims 1-19 and 118-120 are withdrawn from consideration and claims 20-72 and 90-117 are canceled. Applicants reserve the right to prosecute these and other claims in future applications, where appropriate. Claims 73-89 stand rejected under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement. Claims 73-89 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Schwinn et al., *Helvetica Chimica Acta*, 2002, 85(1), 255-264 ("Schwinn") and under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,600,074 to Onishi et al. ("Onishi") and by U.S. Patent No. 6,749,756 to Curran et al. ("Curran"). In addition, claims 73-89 stand rejected under 35 U.S.C. § 103(a) as being obvious in light of Onishi and as being obvious in light of Curran.

Applicants respectfully traverse these rejections and submit the enclosed amendments and remarks. In the response, claims 73-75 and 84-85 have been amended, claims 80 and 82 have been canceled, and new claims 121-128 have been added. Amendments to claims 74, 75, 84, and 85 correct minor typographical errors. All amendments and new claims are fully supported by the application as originally filed.

### Rejections under 35 U.S.C. § 112, First Paragraph

(1) The Examiner has rejected claims 73-89 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner states that the subject matter, including formula "$C_6H_{5-m}$", "fluorous group", "nucleophilic

group", "leaving group", or "electrophilic group", is not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

The MPEP states that "[a]n applicant may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole." MPEP § 2163(II)(3)(a). "In claims involving chemical materials, generic formulae usually indicate with specificity what the generic claims encompass. One skilled in the art can distinguish such a formula from others and can identify many of the species that the claims encompass. Accordingly, such a formula is normally an adequate description of the claimed genus." *Regents of the University of California v. Eli Lilly*, 119 F.3d 1559, 1568 (Fed. Cir. 1997). "[I]t is well established in our law that conception of a chemical compound requires that the inventor be able to define it so as to distinguish it from other materials, and to describe how to obtain it." *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.,* 927 F.2d 1200, 1206 (Fed. Cir. 1991).

Examples I and VII (see page 28, paragraphs [0218 to [0219] and pages 37-38, paragraphs [0247] to [0249]) of the subject application demonstrate working examples of the claimed subject matter. In addition, Schemes 1 through 12, and 15 show chemical equations that demonstrate to one skilled in the art how to synthesize various compounds that fall within the generic structure of $X\text{-}CR^1R^2\text{-}C_6H_{5\text{-}m}\text{-}[W_p(CH_2)_nR_f]_m$, as set forth and claimed in claim 73. These Schemes and Examples demonstrate examples of compounds as set forth in claim 73, wherein X is a leaving group (see Schemes 1, 2, 6, 7, 8, and Examples I and VII), wherein X is a

nucleophilic group (see Schemes 3, 4, 7, 8, 9, 10, and 11), and wherein X is an electrophilic group (see Schemes 6, 8, 11, and 12). It is respectfully submitted that the present disclosure demonstrates conception of the chemical compounds and describes how to obtain them. One skilled in the art would be able to distinguish the formula of claim 73 from others and identify many of the species that the claims encompass, including those set forth in the disclosure of the subject application. Applicants believe that, in light of the MPEP and the established case law, the written description requirement has been satisfied by the disclosure of the subject application and respectfully request withdrawal of the rejection of claim 73-89 under the written description requirement of 35 U.S.C. § 112, first paragraph.

(2) The Examiner has rejected claims 73-89 under 35 U.S.C. § 112, first paragraph, as failing to satisfy the enablement requirement. Specifically the examiner states that while the specification is enabling for the fluorous group $-C_4F_9$, or where $C_6H_{5-m}$ represents a phenyl moiety, the specification does not reasonably provide enablement for a fluorous group other than $-C_4F_9$, or when $C_6H_{5-m}$ represent a -CH=C=C=C=C=CH- moiety (i.e., wherein m is 3).

"The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." *United States v. Techtronics, Inc.,* 857 F.2d 778, 785 (Fed. Cir. 1988). "As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. § 112 is satisfied." *In re Fisher,* 427 F.2d 833, 839 (CCPA 1970) (emphasis added). "[E]ven in

unpredictable arts, a disclosure of every operable species is not required." MPEP § 2164.04.

The Examiner states that the specification is only enabling for the fluorous group $-C_4F_9$ and not enabling for other fluorous compounds such as 3-difluoromethyl (thiophene). Applicants have defined a fluorous group as a compound comprising a portion rich in carbon-fluorine bonds, such as fluorocarbons, perfluorocarbons, fluorohydrocarbons, fluorinated ethers, fluorinated amines, and fluorinated adamantyl groups, and provides examples of suitable fluorous groups, $R_f$, for use in the present invention. (Paragraph [0053]). The specification sets forth numerous examples of making compounds where the fluorous group comprises, for example, $-C_8F_{17}$, $-CH_2C_8F_{17}$, $-CH_2CH_2C_8F_{17}$, $-CH_2CH_2CH_2C_8F_{17}$, $-CH{=}CHC_8F_{17}$, $-S-CH_2CH_2C_8F_{17}$, and $-O-CH_2CH_2CH_2C_8F_{17}$. In addition, many of the cited compounds are made from iodofluorocarbons, such as $I-CH_2C_8F_{17}$, $I-CH_2CH_2C_8F_{17}$, or $I-CH_2CH_2CH_2C_8F_{17}$, using substitution reactions, which one skilled in the art would recognize as being relatively predictable in nature. One skilled in the art would recognize that given the disclosure of the subject application, extending the disclosure to other fluorous groups, for example by using other iodofluorocarbons, would not require undue experimentation.

The Examiner states that while the specification enables $C_6H_{5-m}$ as a phenyl moiety, the specification does not reasonably provide enablement when $C_6H_{5-m}$ represent a -CH=C=C=C=CH- moiety (i.e., wherein m is 3). Applicant is unclear regarding the Examiner's statement. The entire structure in question is $C_6H_{5-m}-[W_p(CH_2)_nR_f]_m$, and when m is 3, the $C_6H_{5-m}$ structure must necessarily have 3 groups having the structure $[W_p(CH_2)_nR_f]$ replacing the hydrogens. Therefore, the

Examiner's proposed structure, -CH=C=C=C=C=CH-, would not be chemically possible since it lacks the open valences to form bonds with the 3 $[W_p(CH_2)_nR_f]$ groups. In addition, the specification states that the phenyl ring of fluorous compound (I) (i.e, the structure in claim 73) is a substituted phenyl ring having up to 5 substitutions, more typically 1 to 3 substitutions, wherein the substituent(s) on the phenyl ring have an increased fluorous nature. (See paragraph [0068]). Thus, one skilled in the art would recognize the formula $C_6H_{5-m}$ as representing a substituted phenyl ring having 1+m substitutions. The structure of claim 73, where $C_6H_{5-m}$ represents a substituted phenyl moiety, is fully enabled by the specification, as pointed out by the Examiner in the text of the Office Action. (See Office Action text, page 3, lines 2-3). In light of the above remarks and the requirements of the MPEP and case law, Applicants believe that the structure, as set forth in the claims, is fully enabled by the specification as filed. Withdrawal of the rejection of claims 73-89 under 35 U.S.C. § 112, first paragraph, for lack of enablement is respectfully requested.

Rejections Under 35 U.S.C. §§ 102(a) and 102(e)

The Examiner has rejected claims 73-89 under 35 U.S.C. 102(a) as being anticipated by Schwinn. The Schwinn disclosure has a publication date of January 2002. Applicants assert that the compounds represented by the formula in claim 73 have a date of invention (conception and reduction to practice) prior to the publication date of Schwinn. Applicants therefore swear back to an invention date prior to January 2002. In support of Applicants' claim of prior invention, Applicants enclose herewith a signed declaration by co-inventor Dr. Zhiyong Luo under 37 C.F.R. § 1.131. The

declaration under § 1.131 includes copies of notebook pages showing reduction to practice of two structures having the general structure as set forth in claim 73. The redacted dates of the laboratory notebook pages are prior to January 2002.

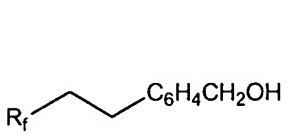
Applicants claim an invention date prior to the publication date of the Schwinn reference. Therefore, Schwinn does not constitute prior art under 35 U.S.C. § 102(a) and does not anticipate the claims of the subject application. Applicants respectfully request withdrawal of the rejection of claims 73-89 under 35 U.S.C. § 102(a).

Claims 73-89 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Onishi. The Examiner states that Onishi discloses three compounds 2-heptafluoroisopropyl-5-(1-hydroxyethyl)-aniline, 4-heptafluoroisopropyl-3-hydroxymethylaniline, and 4-heptafluoroisopropyl-2-(1-hydroxyethyl)aniline, and that these compounds anticipate the compounds of the formula of claim 73, wherein the variable X represents a nucleophilic group; the variable $R^1$ or $R^2$ independently represent hydrogen or a linear alkyl; the variable m is 1; the variable p is 1; the variable W represents $NR^3$, and $R^3$ represents hydrogen; the variable n is zero; and the variable $R_f$ represents a fluoro group.

For a reference to anticipate a claim, the reference must teach every element of the claim. MPEP § 2131. Applicants respectfully argue that the structures disclosed in Onishi (and highlighted by the Examiner) do not teach every element of the structure set forth in claim 73 (i.e., $X\text{-}CR^1R^2\text{-}C_6H_{5\text{-}m}\text{-}[W_p(CH_2)_nR_f]_m$). The compounds from Onishi that the Examiner relies on are aniline compounds having the general structure $HO\text{-}CH_2\text{-}C_6H_3\text{-}(NH_2)(R^y)$, where $R^y$ represents $-C_3F_7$. These compounds do

not anticipate X-$CR^1R^2$-$C_6H_{5-m}$-$[W_p(CH_2)_nR_f]_m$, as set forth in claim 73, because the -$NH_2$ group on the phenyl ring of the Onishi compounds does not have the structure $[W_p(CH_2)_nR_f]$. Specifically, according to claim 73, the phenyl substituents have the structure $[W_p(CH_2)_nR_f]$, which must contain a fluorous group $R_f$. The structures of Onishi have a phenyl substituent (i.e., -$NH_2$) which does not have the structure $[W_p(CH_2)_nR_f]$, that is, they do not have a fluorous group attached to the nitrogen, either directly or indirectly. Therefore, the compounds of Onishi do not anticipate the structure claimed in claim 73. Withdrawal of the rejection of claims 73-89 under 35. U.S.C. § 102(e) is respectfully requested.

The Examiner has rejected claims 73-89 under 35 U.S.C. § 102(e) as being anticipated by Curran. Curran discloses a method of separating compounds by a process including tagging an organic compound with a fluorous tag, and separating the tagged compound from a second tagged compound by a separation technique. Curran discloses the structures below as a representative example of a synthesis with fluorous tagged compounds.

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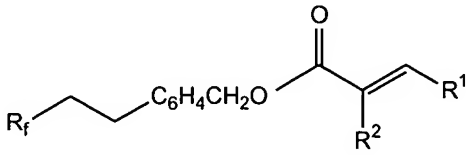


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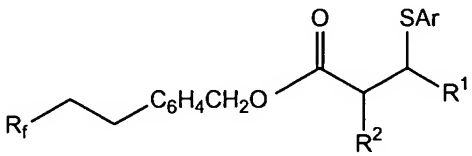


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Applicants have amended claim 73 to include the recitation, "wherein when X is -OH, $R^1$ is one of hydrogen, a phenyl, $C_6H_{5-q}(W')_q$, $C_6H_{5-m'}[W_{p'}(CH_2)_{n'}R_f]_{m'}$ and $C_6H_{5-m''}[W_{p''}(CH_2)_{n''}R_f]_{m''}$ and $R^2$ is one of a phenyl, $C_6H_{5-q}(W')_q$, $C_6H_{5-m'}[W_{p'}(CH_2)_{n'}R_f]_{m'}$ and $C_6H_{5-m''}[W_{p''}(CH_2)_{n''}R_f]_{m''}$ and wherein when X is an electrophilic group, X comprises –NCZ, wherein Z is one of oxygen and sulfur." Support for this amendment may be

found in paragraphs [0072], [0079] and [0094], as well as elsewhere in the specification as originally filed. In paragraph [0072], Applicants disclose fluorous trityl type tagging reagents, where $R^1$ is a phenyl, $C_6H_{5-q}(W')_q$, $C_6H_{5-m'}[W_{p'}(CH_2)_{n'}R_f]_{m'}$ or $C_6H_{5-m''}[W_{p''}(CH_2)_{n''}R_f]_{m''}$ and $R^2$ is phenyl, $C_6H_{5-q}(W')_q$, $C_6H_{5-m'}[W_{p'}(CH_2)_{n'}R_f]_{m'}$ or $C_6H_{5-m''}[W_{p''}(CH_2)_{n''}R_f]_{m''}$. In paragraph [0079], Applicants disclose a compound where, when the nucleophilic component X of fluorous compound (I) is a hydroxyl group, group $R^1$ is hydrogen and group $R^2$ is $C_6H_{5-q}(W')_q$. In paragraph [0094], Applicants disclose compound (I) were X is an electrophilic group comprising either an isocyanate group of an isothiocyanate group.

As amended, claim 73 recites that when X is hydroxyl, $R^2$ is a substituted phenyl. Compound 1 of Curran discloses a compound wherein X is hydroxyl and both R1 and R2 are hydrogen. Thus, compound 1 of Curran does not anticipate claim 73 as amended.

Compounds 2 and 3 of Curran are compounds were X represents an electrophilic group (i.e., a carbonyl ester, either saturated or unsaturated, that will react with certain nucleophilic groups). As amended, claim 73 recites that when X is an electrophilic group, X is an electrophilic group comprising –NCZ, wherein Z is one of oxygen and sulfur (i.e., where X is an isocyanate or an isothiocyanate). The electrophilic groups of compounds 2 and 3 of Curran comprise electrophilic groups that are neither isocyanate nor isothiocyanate. Thus, compounds 2 and 3 of Curran do not anticipate claim 73, as amended. Applicant submits that claim 73, as amended, is novel over Curran and respectfully requests that the rejection of claims 73-89 under 35 U.S.C. § 102(e) be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143.

The Examiner has rejected claims 73-89 under 35 U.S.C. § 103(a) as being unpatentable over Onishi. It is respectfully submitted that the claimed structure of claim 73 is non-obvious over Onishi, for at least the reasons that (a) there is no suggestion or motivation to modify the Onishi reference and (b) Onishi does not teach or suggest all the claim limitations. Onishi discloses perfluoroalkylated aniline compounds and a process for producing the same. Onishi discloses a number of perfluoroalkylated aniline compounds, three of which include 2-heptafluoroisopropyl-5-(1-hydroxyethyl)-aniline, 4-heptafluoroisopropyl-3-hydroxymethylaniline, and 4-heptafluoroisopropyl-2-(1-hydroxyethyl)aniline. As discussed above, the compounds of Onishi do not anticipate the structure of the subject application, as set forth in claim 73. Onishi does not disclose an aniline having a fluorous group attached to the nitrogen, as required to anticipate the structure of claim 73 of the subject application. Thus, Onishi does not teach all of the claim limitations.

The process of Onishi is "related to a process for converting the hydrogen atom on the benzene ring of an aniline into a perfluoroalkyl group." (Column 7, lines 55-

57). Onishi is not directed to a process for synthesizing an N-fluorous substituted aniline compound. The anilines of Onishi are designed for use as intermediate or raw materials for the synthesis of compounds of industrial interest, in particular as raw materials for agricultural and horticultural insecticides. (Column 1, lines 10-29). In particular, Onishi uses the aniline compounds to form an amide bond with a substituted phthalic acid isoimide to form diamide compounds having insecticidal activity. (See column 25, Reference Examples 1 and 2). Onishi does not disclose the use of the perfluoroalkylated aniline compounds as fluorous tagging and scavenging reagents, as disclosed in the subject application, nor does it teach, suggest, or motivate one to use the compounds as fluorous tagging or scavenging reagents. Onishi does not provide motivation or suggestion to modify the teaching of Onishi to synthesize an N-fluorous substituted aniline compound. Thus, the claims of the subject application are non-obvious in view of Onishi. Withdrawal of the rejection of claims 73-89 under 35 U.S.C. § 103(a) over Onishi is respectfully requested.

The Examiner has rejected claims 73-89 under 35 U.S.C. § 103(a) as being unpatentable over Curran. Curran discloses a method of separating compounds including the steps of tagging a first organic compound with a first fluorous tagging moiety, tagging a second organic compound with a second fluorous tagging moiety, separating the tagged compounds using a separation method. The focus of Curran is the separation of two or more compounds using the method disclosed therein. In one representative example of a synthesis with fluorous tagged compounds, Curran discloses the compounds 1, 2, and 3, as set forth above.

Applicants respectfully submit that the claimed structure of claim 73 is non-obvious over Curran, for at least the reasons that (a) there is no suggestion or motivation to modify the Curran reference and (b) Curran does not teach or suggest all the claim limitations. As discussed above, in view of the amendments to claim 73, Curran does not anticipate the claims of the subject application. While Curran discloses a process of separation of compounds by fluorous tagging, the tagging and scavenging reactants of claims 73-89 of the subject application are not disclosed. Nor is there any motivation or suggestion in Curran to synthesize the compounds of claims 73-89. As noted by the Examiner in a related patent by Curran (U.S. Patent No. 6,156,896 pertaining to fluorous reactions and separations), Curran "does not indicate which compounds of instant compounds may be useful in the claimed invention." (See Office Action text, page 4, lines 3-5). Likewise, the Curran patent used for the rejection does not indicate which compounds of the claimed compounds would be useful in the claimed invention. Thus, there would be no motivation or suggestion by Curran to modify the compounds disclosed therein to give the compounds of the claims of the subject application.

In addition, Curran teaches away from a variety of different fluorous tags, and instead prefers using a known "family of tags", as disclosed therein, that differ in some regular or incremental fashion, such as by varying the size of the perfluoro group. Curran does not teach the use of a variety of different fluorous tags having leaving groups, nucleophilic groups, or electrophilic groups that can react with different functional groups as a method to increase the fluorous nature of an organic compound.

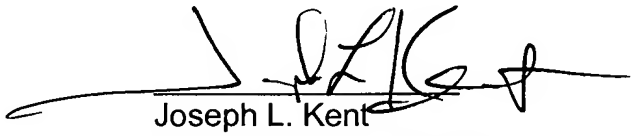
Therefore, the claims of the subject application are non-obvious in view of Curran. Withdrawal of the rejection of claims 73-89 under 35 U.S.C. § 103(a) over Curran is respectfully requested.

## CONCLUSION

Applicant submits that claims 73-89 and new claims 121-128 of the subject application recite a novel and non-obvious compound for increasing the fluorous nature of an organic compound. In view of the amendments and remarks presented above, Applicant respectfully submits that the subject application is in condition for allowance. Accordingly, reconsideration of the rejections and allowance of claims 73-89 and 121-128 at an early date are earnestly solicited.

If the undersigned can be of assistance to the Examiner in addressing issues to advance the application to allowance, please contact the undersigned at the number set forth below.

Respectfully submitted,



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